



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/829,365	04/09/2001	Scott B. Kesler		9693

7590 08/14/2002
JIMMY L. FUNKE
DELPHI TECHNOLOGIES, INC.
Legal Staff Mail Code A-107
P. O. Box 9005
Kokomo, IN 46904-9005

EXAMINER

HARRISON, MONICA D

ART UNIT PAPER NUMBER

2855

DATE MAILED: 08/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/829,365

Applicant(s)

KESLER, SCOTT B.

Examiner

Monica D. Harrison

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsman's Patent Drawing Review (PTO-948)

- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Rask.

Regarding claim 1, Rask discloses an ignition diagnostic system for an internal combustion engine, comprising: an ignition coil (Figure 1, references 31 and 32) having a primary coil (Figure 1, reference 33) coupled to a secondary coil (Figure 1, reference 34), said secondary coil connected across an electrode gap (Figure 1, reference 5) of an ignition plug (Figure 2, reference 63); means for producing a bias voltage across said electrode gap during a period of time following generation of a spark across said gap; a detection circuit producing a buffered version of any ion current flowing across said electrode gap resulting from said bias voltage; and a diagnostic circuit responsive to said buffered version of said ion current to produce an output signal, said output signal defining a pulse width indicative of combustion quality that is proportional to an amount of said ion current flowing across said electrode gap (column 9, lines 50-67; column 10, lines 1-45).

Regarding claim 2, Rask discloses diagnostic circuit is configured to produce said output signal with a pulse width indicative of complete combustion if said ion current flowing across said electrode gap is greater than a first predefined amount of current (column 4, lines 14-47).

Regarding claim 3, Rask discloses diagnostic circuit is configured to produce said output signal with a pulse width indicative of non-combustion event if said ion current flowing across said electrode gap is greater than a second predefined amount of current (column 4, lines 14-47).

Regarding claim 4, Rask discloses including a capacitor electrically connected to said diagnostic circuit, said diagnostic circuit charging said capacitor proportional to an amount of ion current flowing across said electrode gap, said pulse width of said output signal defined by a discharge time of said capacitor to a predefined voltage level (column 4, lines 13-47).

Regarding claim 5, Rask discloses including an ignition control circuit configured to control a coil switching device electrically connected to said primary coil, said ignition control circuit configured to control said coil switching device to energize said primary coil a plurality of times during any ignition plug firing event (column 3, lines 66-67; column 4, lines 1-12).

Regarding claim 6, Rask discloses means for producing a bias voltage includes said coil switching device, said primary coil and said secondary coil, said bias voltage resulting from a rapid increase in a voltage across said primary coil each of said plurality of times said coil switching device energizes said primary coil (column 3, lines 66-67; column 4, lines 1-12; column 10, lines 36-45).

Regarding claim 7, Rask discloses diagnostic circuit is configured to produce said output signal with a pulse width indicative of complete combustion if said ion current flowing across said electrode gap is greater than a first predefined amount of current; said diagnostic circuit further configured to produce a termination signal indicative of an end of said ignition plug firing event if said ion current flowing across said electrode gap is greater than said first predefined amount of current (column 4, lines 13-47).

Regarding claim 8, Rask discloses including an ignition control circuit configured to control a coil switching device electrically connected to said primary coil, said ignition control circuit configured to control said coil switching device to energize said primary coil only a single time during any ignition plug firing event (column 3, lines 66-67; column 4, lines 1-12).

Regarding claim 9, Rask discloses including a control circuit responsive to said output signal to determine a quality of combustion of an air/fuel mixture within an engine cylinder in communication with said ignition plug (column 5, lines 7-67; column 6, lines 14-50).

Regarding claim 10, Rask discloses control circuit is responsive to a number of output signals each corresponding to a different one of a corresponding number of engine cylinders to determine a quality of combustion of an air/fuel mixture within any of said number of engine cylinders (column 5, lines 7-67; column 6, lines 14-50).

Regarding claim 11, Rask discloses an ignition diagnostic system for an internal combustion engine, comprising: an ignition coil (Figure 1, references 31 and 32) having a primary coil (Figure 1, reference 33) coupled to a secondary coil (Figure 1, reference 34), said secondary coil connected across an electrode gap (Figure 1, reference 5) of an ignition plug (Figure 2, reference 63); means for producing a bias voltage across said electrode gap during a period of time following generation of a spark across said gap; a detection circuit producing a buffered version of any ion current flowing across said electrode gap resulting from said bias voltage; a diagnostic circuit responsive to at least some amount of said buffered version of said ion current to produce an output signal defining a pulse width indicative of a fouled plug condition (column 6, line 51-67; column 7, lines 1-8).

Regarding claim 12, Rask discloses including a capacitor electrically connected to said diagnostic circuit, said diagnostic circuit charging said capacitor proportional to an amount of ion current flowing across said electrode gap, said pulse width of said output signal defined by a discharge time of said capacitor to a predefined voltage level (column 4, lines 22-57).

Regarding claim 13, Rask discloses including an ignition control circuit configured to control a coil switching device electrically connected to said primary coil, said ignition control circuit configured to control said coil switching device to energize said primary coil a plurality of times during any ignition plug firing event (column 3, lines 66-67; column 4, lines 1-12).

Regarding claim 14, Rask discloses means for producing a bias voltage includes said coil switching device, said primary coil and said secondary coil, said bias voltage resulting from a rapid increase in a voltage across said primary coil each of said plurality of times said coil switching device energizes said primary coil (column 3, lines 66-67; column 4, lines 1-12; column 10, lines 36-45).

Regarding claim 15, Rask discloses including an ignition control circuit configured to control a coil switching device electrically connected to said primary coil, said ignition control circuit configured to control said coil switching device to energize said primary coil only a single time during any ignition plug firing event (column 3, lines 66-67; column 4, lines 1-12).

Regarding claim 16, Rask discloses an ignition diagnostic system for an internal combustion engine, comprising: an ignition coil (Figure 1, references 31 and 32) having a primary coil (Figure 1, reference 33) coupled to a secondary coil (Figure 1, reference 34), said secondary coil connected across an electrode gap (Figure 1, reference 5) of an ignition plug (Figure 2, reference 63); means for producing a bias voltage across said electrode gap during a

Art Unit: 2855

period of time following generation of a spark across said gap; a detection circuit producing a buffered version of any ion current flowing across said electrode gap resulting from said bias voltage; a diagnostic circuit producing an output signal defining a pulse width indicative of a non-combustion event if said detection circuit fails to detect ion current flowing across said electrode gap resulting from said bias voltage (column 10, lines 36-45).

Regarding claim 17, Rask discloses including a capacitor electrically connected to said diagnostic circuit, said diagnostic circuit initially charging said capacitor to a pre-charge level and thereafter charging said capacitor proportional to an amount of ion current flowing across said electrode gap, said pulse width of said output signal defined by a discharge time of said capacitor to a predefined voltage level (column 4, lines 22-57).

Regarding claim 18, Rask discloses including an ignition control circuit configured to control a coil switching device electrically connected to said primary coil, said ignition control circuit configured to control said coil switching device to energize said primary coil a plurality of times during any ignition plug firing event (column 3, lines 66-67; column 4, lines 1-12).

Regarding claim 19, Rask discloses means for producing a bias voltage includes said coil switching device, said primary coil and said secondary coil, said bias voltage resulting from a rapid increase in a voltage across said primary coil each of said plurality of times said coil switching device energizes said primary coil (column 3, lines 66-67; column 4, lines 1-12; column 10, lines 36-45).

Regarding claim 20, Rask discloses including an ignition control circuit configured to control a coil switching device electrically connected to said primary coil, said ignition control

Art Unit: 2855

circuit configured to control said coil switching device to energize said primary coil only a single time during any ignition plug firing event (column 3, lines 66-67; column 4, lines 1-12).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica D Harrison whose telephone number is 703-305-4758.


The examiner can normally be reached on M-F 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Fuller can be reached on 703-308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7725 for regular communications and 703-305-3839 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Monica D. Harrison
AU 2855

mdh
August 12, 2002


Benjamin A. Fuller
Supervisory Patent Examiner
Art Unit 2855